

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): A maintenance cartridge for a recording apparatus to which an ink cartridge is to be mounted, the maintenance cartridge comprising:

a main body mountable to the recording apparatus at least at a same position as a position, at which the ink cartridge is to be mounted to the recording apparatus; and

at least one plug element, provided in a region corresponding to an ink supply port of the ink cartridge, for sealing an ink supply needle that supplies ink to an ink jet recording head

wherein said maintenance cartridge is a dummy cartridge that does not store fluid or supply fluid to the recording apparatus.

2. (original): The maintenance cartridge according to claim 1, wherein the plug element comprises:

a cylindrical portion for guiding the ink supply needle; and

a taper portion for sealing an ink inlet hole of the ink supply needle.

3. (original): The maintenance cartridge according to claim 2, wherein an inner surface of the taper portion is adapted to closely contact the ink inlet hole.

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Appln. No. 09/896,116

4. (original) The maintenance cartridge according to claim 1, wherein the plug element is normally be in a closely adhering state, and expandable by the ink supply needle.

5. (original): The maintenance cartridge according to claim 2, wherein at least one protruded rib portion extending in an insertion direction of the ink supply needle is formed on an inner surface of the cylindrical portion.

6. (original): The maintenance cartridge according to claim 1, further comprising:
a memory device storing data concerning maintenance.

7. (original): The maintenance cartridge according to claim 6, wherein the data includes a message that is displayable on a monitor.

8. (original): The maintenance cartridge according to claim 6, wherein the memory device stores data for controlling supply of a negative pressure, which is used for filling ink into the recording head and/or for solving a clogged-up condition of nozzle openings.

9. (currently amended): A maintenance cartridge, comprising:
an outward form by which a detection system of a recording apparatus can identify the maintenance cartridge,
wherein the outward form distinguishes the maintenance cartridge from an ink cartridge,

wherein the maintenance cartridge does not store fluid or supply fluid to the recording apparatus.

10. (original): The maintenance cartridge according to claim 1, wherein a plurality of the plug elements are provided correspondingly to an array of the ink supply needles so that the main body and the plurality of the plug elements are provided as a single unit.

11. (previously presented): An ink jet recording apparatus adapted to mount at least two ink cartridges having ink supply ports and memory devices, and at least one maintenance cartridge having an outward form the same or substantially the same as the corresponding ink cartridge, a plug element provided in a region corresponding to the ink supply port of the corresponding ink cartridge, and a memory device, the ink jet recording apparatus comprising:

ink supply needles, each being removably attachable to the ink supply port and sealable by the plug element;

an ink jet recording head adapted to be supplied with ink from the ink cartridges through the ink supply ports and the ink supply needles;

a control system adapted to read data from the memory devices of the ink cartridges and the maintenance cartridge to control a recording operation of the apparatus,

wherein when the control system detects, based on the data read from the memory device of the maintenance cartridge, that the maintenance cartridge is attached to the recording apparatus, the control system executes a substitute printing operation using ink in the ink cartridge or ink cartridges mounted to the recording apparatus.

12. (previously presented): An ink jet recording apparatus adapted to mount an ink cartridge having at least one ink supply port, the recording apparatus comprising:

at least one ink supply needle corresponding to and removably attachable to the at least one ink supply port;

a recording head adapted to be supplied with ink from the ink cartridge through the at least one ink supply needle and the at least one ink supply port;

at least one maintenance cartridge mounted to the recording apparatus, and provided with at least one plug element corresponding in location to the at least one ink supply port of the ink cartridge, wherein the at least one plug element seals the at least one ink supply needle, wherein the at least one maintenance cartridge does not hold fluid or supply fluid to the recording head.

13. (previously presented): An ink jet recording apparatus adapted to mount a plurality of ink cartridges having ink supply ports, the recording apparatus comprising:

ink supply needles corresponding to and removably attachable to the ink supply ports;

a recording head adapted to be supplied with ink from the ink cartridges through the ink supply needles and the ink supply ports;

at least one maintenance cartridge mounted to the recording apparatus, and provided with plug elements corresponding in location to the at the ink supply port of the ink cartridges, wherein the plug elements corresponds to and seal the ink supply needles and prevents the evaporation of a fluid contained in the recording head, wherein the at least one maintenance cartridge does not hold fluid or supply fluid to the recording head.

14. (original): The ink jet recording apparatus according to claim 12 or 13, wherein the maintenance cartridge has a memory device that stores information concerning maintenance.

15. (original): The ink jet recording apparatus according to claim 14, wherein a recording operation is controlled based on data stored in at least one of memory devices attached to the ink cartridges and data stored in the memory device of the maintenance cartridge.

16. (original): The ink jet recording apparatus according to claim 14, wherein the information concerning maintenance includes data for controlling supply of a negative pressure, which is used for filling ink into the recording head and/or for solving a clogged-up condition of nozzle openings.

17. (original): The ink jet recording apparatus according to any one of claims 11, 12 and 13, wherein a plurality of the plug elements are provided in the single maintenance cartridge correspondingly to array of the ink supply needles.

18. (original): The maintenance cartridge according to claim 1, wherein the maintenance cartridge corresponds to and is replaceable with the single ink cartridge.

19. (original): The maintenance cartridge according to claim 2, wherein the maintenance cartridge corresponds to and is replaceable with a plurality of the ink cartridges.

20. (previously presented): The maintenance cartridge as claimed in claim 1, wherein the at least one plug element prevents liquid from flowing out of the ink supply needle from the ink jet recording head.

21.(previously presented): The maintenance cartridge as claimed in claim 20, wherein the at least one plug element is contained in the maintenance cartridge.

22. (currently amended):[The]A maintenance cartridge [as claimed in claim 9, further] comprising:

an outward form by which a detection system of a recording apparatus can identify the maintenance cartridge,

wherein the outward form distinguishes the maintenance cartridge from an ink cartridge;

at least one plug element,

wherein the maintenance cartridge is mounted on the recording apparatus,

wherein the recording apparatus comprises a recording head coupled to an ink supply passage, and

wherein the at least one plug element prevents liquid from flowing out of the ink supply passage from the recording head.

23.(previously presented): The maintenance cartridge as claimed in claim 22, wherein the at least one plug element is contained in the maintenance cartridge.

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Appln. No. 09/896,116

24. (previously presented): The ink jet recording apparatus as claimed in claim 11, wherein the plug element prevents liquid from flowing out of the ink supply needles from the ink jet recording head.

25. (previously presented): The ink jet recording apparatus as claimed in claim 24, wherein the plug element is contained in the maintenance cartridge.

26. (previously presented): The ink jet recording apparatus as claimed in claim 12, wherein the at least one plug element prevents liquid from flowing out of the at least one ink supply needles from the recording head.

27. (previously presented): The ink jet recording apparatus as claimed in claim 26, wherein the at least one plug element is contained in the at least one maintenance cartridge.

28. (previously presented): The ink jet recording apparatus as claimed in claim 13, wherein the plug elements prevent liquid from flowing out of the ink supply needles from the recording head.

29. (previously presented): The ink jet recording apparatus as claimed in claim 28, wherein the plug elements are contained in the at least one maintenance cartridge.

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Appln. No. 09/896,116

30. (previously presented): A maintenance cartridge for a recording apparatus, comprising:

a body mountable to the recording apparatus at a position at which an ink cartridge is to be mounted to the recording apparatus, wherein the recording apparatus comprises a recording head and an ink supply passage providing a fluid connection to the recording head; and

a plug element that seals the ink supply passage that supplies ink to the recording head wherein the body is incapable of holding fluid or supplying fluid to the recording head.

31. (previously presented): The maintenance cartridge as claimed in claim 30, wherein the plug element seals the ink supply passage to prevent liquid from flowing in a direction from the recording head and out of the ink supply passage.

32. (previously presented): The maintenance cartridge as claimed in claim 31, wherein, when the ink cartridge is mounted to the recording apparatus, ink is supplied from the ink cartridge to the recording head via the ink supply passage.

33. (canceled).